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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/753,528	01/09/2004	Chi-Ming Che	V0690.0013/P013	7190

32172 7590 03/06/2006

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EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 03/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/753,528

Applicant(s)

CHE ET AL.

Examiner

Marie R. Yamnitzky

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6-18 is/are rejected.
- 7) ☒ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>rec'd 09 Jan 2004</u> . | 6) <input type="checkbox"/> Other: _____ |

1. Claims 1-3 and 6-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The scope of claim 1, with claims 2, 3 and 6-12 dependent therefrom, is not clear in setting forth “an optionally substituted borazine ring *or part thereof*” as a possibility for R₁-R₆ (emphasis added). It is not clear if “part thereof” allows R₁-R₆ to be boron, nitrogen, any element that may be part of an optional substituent of a borazine ring and/or combinations thereof.

The scope of the materials named in claim 12 is not clear. The name “8-hydroxyquinoline aluminum” does not reflect a complete compound. It is not clear if this name refers to “tris (8-hydroxyquinoline) aluminum” or to any aluminum complex comprising at least one 8-hydroxyquinoline ligand. The second name (i.e. “2,2',2"-...benzimidazole”) does not appear to follow standard chemical nomenclature rules; the chemical structure of the material/compound of this name is not clear.

2. Claim 16 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 16 is limited to a specific compound that is outside the scope of claim 13, from which claim 16 depends. The definitions of R₁-R₆ as set forth in claim 16 are inconsistent with

the proviso set forth in claim 13, which excludes compounds in which R₁ is hydrogen and R₂ is aryl when R₁, R₃ and R₅ are the same and R₂, R₄ and R₆ are the same. A “phenyl” is an “aryl”.

3. Regarding claim interpretation:

Where a claim dependent from claim 13 defines one or more of R₁-R₆ to encompass combinations excluded by the proviso of claim 13 as well as combinations not excluded by the proviso, the dependent claim is interpreted in light of claim 13's proviso to exclude the combinations of the proviso. For example, a compound in which each of R₁, R₃ and R₅ is methyl and each of R₂, R₄ and R₆ is phenyl is outside the scope of claim 18 because this combination of R₁-R₆ is excluded by claim 13's proviso, but a compound in which each of R₁, R₃ and R₅ is phenyl and each of R₂, R₄ and R₆ is methyl is within the scope of claim 18 because it is not excluded by claim 13's proviso.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 13-16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Funayama et al. (US 5,292,830).

Art Unit: 1774

Many of the borazine compounds named in the paragraph bridging columns 8 and 9 of the patent to Funayama et al. meet the limitations of one or more of present claims 13-16 and 18.

For example, “1,3,5-trimethyl-2,4,6-triphenylborazine” (c. 9, l. 3-4) is a compound of present formula I in which each of R₁, R₃ and R₅ is phenyl and each of R₂, R₄ and R₆ is methyl, and meets the limitations of present claims 13-15 and 18.

As another example, “borazine” (c. 8, l. 58) is a compound of present formula I in which each of R₁-R₆ is hydrogen, and meets the limitations of present claims 13 and 15.

“2,4,6-triphenylborazine” (c. 8, l. 68) is the compound defined by present claim 16.

6. Claims 13-15, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by English et al. (US 3,166,520).

Many of the borazole compounds named in column 3 of the patent to English et al. meet the limitations of one or more of present claims 13-15, 17 and 18.

For example, the first ten compounds named in column 3 are compounds of present formula I in which each of R₁-R₆ is an alkyl group, and meet the limitations of present claim 13. The first six of these compounds further meet the limitations of present claim 15 because each of the alkyl groups in these compounds is a C₁₋₄ alkyl group.

As another example, the 11th compound named in c. 3 (“Hexaphenylborazole”) is a compound of present formula I in which each of R₁-R₆ is an aryl (phenyl) group, and meets the limitations of present claims 13-15.

Art Unit: 1774

As another example, "B-tris-(diphenylamino)borazole" (the 24th compound named in c. 3) is the compound defined by present claim 17, and also meets the limitations of present claims 13-15.

As another example, "B-triphenyl-N-trimethylborazole" (the 18th compound named in c. 3) is a compound of present formula I in which each of R₁, R₃ and R₅ is phenyl and each of R₂, R₄ and R₆ is methyl, and meets the limitations of present claims 13-15 and 18.

7. Miscellaneous:

In line 4 of claim 6, "comprising of" should be changed to --comprised of-- or --comprising--.

8. Claims 1-3 and 6-12 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action (and with correction of the informality noted for claim 6).

9. Claims 4 and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Alternatively, claims 4 and 5 would be allowable as written if claim 1 were rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Art Unit: 1774

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yamamoto et al. (US 2002/0057046 A1) disclose the use of borazine compounds of present formula I to make electron emitting devices (e.g. see paragraphs [0028] and [0068]). Yamamoto et al. teach that the electron emitting device may be used in a display comprising a phosphor wherein the phosphor is excited by the electrons (e.g. see paragraphs [0003]-[0006]). However, the deposition process described by Yamamoto et al. alters the starting materials such that a borazine compound of present formula I is not present in the deposited film.

Thompson (US 2005/0230665 A1) teach that an organometallic dopant including at least one borazine or borazole ligand may be used in a carrier transporting layer of an organic electroluminescent device (e.g. see paragraphs [0001]-[0003] and [0072]). No specific examples of such an organometallic dopant is provided by Thompson. Thompson's organometallic dopants must have at least one ligand forming a metal-carbon bond as taught, for example, in paragraph [0051]. A metal-carbon bond would not necessarily be present in a compound of present formula I in which one of R_1 - R_6 is or comprises a metal.

11. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY
February 28, 2006



MARIE YAMNITZKY
PRIMARY EXAMINER

1774